October 7, 2002

Mr. Tom Turner, Esq.
Associate Regional Counsel
U. S. Environmental Protection Agency ("EPA")
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

VIA FACSIMLE TRANSMITTAL AND OVERNIGHT MAIL

Re: **Old American Zinc Superfund Site ("Site")**
Fairmont City, IL (St. Clair County)
Administrative Order on Consent
Docket No.: V-W-'02-C-680

Dear Mr. Turner,

Blue Tee Corp. ("Blue Tee") provides the following comments on the revised Administrative Order on Consent ("AOC") received on September 9, 2002. General comments are presented first with specific comments following.

I. General Comments

You requested that the potentially responsible parties ("PRPs") provide you with comments by October 4, 2002, and advise in writing no later than October 18, 2002 as to whether they will enter into the AOC. These comments reflect the limited amount of time available to the parties to finalize the AOC before your deadline for the commitment decision.

1. Role of the United States (General Services Administration ("GSA"))

It is Blue Tee's position that the AOC cannot distinguish between the Respondents. Specifically, the AOC cannot provide that the GSA's sole obligation will be to pay money for response costs. At the present time, the PRPs are not close to finalizing a side agreement among themselves as to their respective roles and/or financial responsibilities with respect to the AOC. Mr. Pinkston volunteered to prepare the first draft of such an agreement, but I had not received it as of the time these comments were prepared. In addition, the parties have not progressed on negotiations relating to cost-sharing. Blue Tee had been willing to consider an approach pursuant to

which the GSA committed only to pay money. In fact, Blue Tee provided Mr. Pinkston with language to be used in the AOC that would require the GSA to pay for the Work in accordance with a side agreement between the Respondents. However, upon reflection, I have realized that there simply is not sufficient time remaining to work out that side agreement before the terms of the AOC must be completed. Without completion of the side agreement, many provisions of the AOC would not be specific enough and/or could not be implemented practicably. For this reason, the distinction in the current version of the AOC between the obligations of the Respondents and Federal Respondent must be removed.

2. The Scope of the Work

Blue Tee is willing to participate in the AOC to the extent that the work required relates to impacts from smelter operations. Specifically, Blue Tee will investigate metals. While this has been discussed previously, this scope is not clearly reflected in the current Statement of Work ("SOW"). As Mr. Uphoff explained at your meeting, there are nearby properties that may be the source of other constituents such as volatile organic compounds. Blue Tee will not investigate such constituents. If EPA is concerned about such constituents, it should require those other facilities to conduct an investigation. Further, Blue Tee will conduct an aquatic risk assessment, not an ecological risk assessment. More specific comments are reflected in the attached marked copy of the SOW.

II. Specific Comments

1. Page 4, Paragraph 9. Blue Tee requested that this paragraph be revised to be the same as the comparable provision in the Administrative Order on Consent for the Removal Action. Blue Tee does not concur that all creeks, wetlands or school properties have been affected by former smelter operations. Therefore, the more general language previously used is appropriate and Blue Tee again requests that it be substituted for this language.

2. Page 8, Paragraph 27, A.1. Blue Tee requested that the time frames for completion be tied to resolution of EPA's comments. This was requested, in part, based upon Blue Tee's experience that sometimes it is not possible to address comments until they have been discussed and clarified. Further, the comments may give rise to a dispute. However, Blue Tee is willing to tie the time frame to receipt of EPA comments if the phrase, "subject to the provisions of Article XVII, Dispute Resolution" is added after "within 45 days of receiving EPA's comments." The terminology used would also need to be reflected in the SOW.

3. Page 9, Paragraph 27, D. Blue Tee believes that at least 270 days following receipt of analytical data is necessary to prepare the draft RI/FS report and requests that the time period be reflected in this provision.

4. Page 9, Paragraph 27, D. last line. As reflected in Comment 2, Blue Tee requests that the time frame be tied to resolution of EPA comments or that "subject to the provisions of Article XVII, Dispute Resolution" be added after "within 60 days of receiving EPA's comments.

5. Page 15, Paragraph 48, line 1. Delete "effective date of this Consent Order" and substitute "approval of the SAP." Line 9 - Blue Tee will not agree to pay any owner of property within the Site for access. Therefore, this language should be revised to reflect the language originally contained in the AOC. "Respondents' best effort shall include providing reasonable compensation to any off-site property owner."

6. Pages 16 and 17. Blue Tee suggests that the phone, fax and email addresses for the Respondents be included.

7. Page 19, Paragraph 55. Blue Tee believes that GSA must commit to keep records that relate to the Site for a minimum of 10 years after commencement of construction of a remedial action and that this provision should be revised accordingly.

8. Article XX Reimbursement of Past Costs. Blue Tee believes that this provision will require further discussion. As you know, Blue Tee is not responsible for the majority of the past costs that are the subject of this provision. Further, Blue Tee is not clear on how the procedure reflected in this Article will work if GSA has longer to pay than the other Respondents. At a minimum, some portion of the Past Response Costs must be deducted from the amount due from Blue Tee and Xtra Intermodal, Inc. to account for the GSA's share which will be paid later. It appears that there must be some reference to a side agreement and an interim percentage allocation.

9. Page 26, Paragraph 83. Blue Tee will not agree to waive all other statutory and common law claims against EPA. This is not required by the statute and is basically unfair. As Michele Gutman advised you in your meeting, Region 5 previously has agreed to delete this language, for example, in the AOC for the Remedial Investigation/Feasibility Study for the Little Mississinewa River.

10. Page 28, Paragraph 90. Blue Tee requested that this provision be clarified to expressly provide that the Respondents are not agreeing to indemnify EPA for its own negligence. While this is Blue Tee's understanding of this provision, Blue Tee wishes for the parties to be clear on this point. Therefore, Blue requests that the following be added: "Nothing in this Consent Order, however, requires indemnification by Respondents for any claim or cause of action against the United States based on negligent action taken solely and directly by the United States."

III. Editorial Comments

1. Page 9, Paragraph 27, C, line 3. The term "site" should be capitalized.

2. Page 13, Paragraph 45, line 6. The term "site" should be capitalized.

3. Page 18, Paragraph 55, line 2. The term "site" should be capitalized.

4. Page 18, Paragraph 56, line 2. Insert the word "Consent' before "Order".

5. Page 19, Paragraph 57, line 9. The last word should be "if".

6. Page 20, Paragraph 60, Second Paragraph, line 1. The word "site" should be capitalized. Line 3. The word "Consent" should be inserted before " the word "Order".

7. Page 22, Paragraph 67, line 5. The word "Consent" should be inserted before " the word "Order".

8. Page 22, Paragraph 68, line 5. The word "Consent" should be inserted before the word "Order".

9. Page 24, Paragraph 75, line 3. The word "site" should be capitalized. Line 4, the word "Consent" should be inserted before the word "Order."

10. Page 28, Paragraph 92, lines 3-5. There appears to be an editorial aside in these lines that should be removed from the final version of the AOC.

Thank you for your review and consideration of these comments. Please do not hesitate to contact me to discuss any of these issues.

Sincerely,

Terri Faye

Terrance Gileo Faye
Special Counsel to Blue Tee Corp.

TGF/ps

cc: G. Uphoff, EMS, w/o attachments
M. Gutman, Esq., w/o attachments
Daniel W. Pinkston, Esq., w/o attachments
Michael W. Steinberg, Esq., w/o attachments
Ron Murawski – EPA RPM, w/o attachments

revised September 10, 2002

DRAFT

STATEMENT OF WORK FOR A STREAMLINED REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE OLD AMERICAN ZINC PLANT SITE IN FAIRMONT CITY, ST. CLAIR COUNTY, ILLINOIS

PURPOSE:

The purpose of this Statement of Work (SOW) is to set forth requirements for the preparation of a streamlined Remedial Investigation and Feasibility Study (RI/FS). The RI shall evaluate the nature and extent of contamination resulting from previous zinc smelting activities at the Old American Zinc Plant Site ("the Site") and also assess the risk from this contamination on human health and the environment. The FS shall evaluate alternatives for addressing the impact to human health and the environment from the contamination at the Site and nearby areas. The RI/FS Report shall be conducted, at a minimum, consistent with the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (U.S. EPA, Office of Emergency and Remedial Response, October, 1988) and any other guidance that U.S. EPA uses to conduct an RI/FS, as well as any additional requirements in the Administrative Consent Order.

All documents or deliverables required as part of this SOW shall be submitted to U.S. EPA, with a copy to the State of Illinois Environmental Protection Agency (Illinois EPA), for review and approval by U.S. EPA, in consultation with Illinois EPA. The Respondents shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RI/FS at the Site, except as otherwise specified herein.

At the completion of the RI/FS, U.S. EPA, in consultation with Illinois EPA, will be responsible for the selection of a Site remedy and will document this selection in a Record of Decision (ROD). The remedial action selected by U.S. EPA will meet the cleanup standards specified in CERCLA Section 121. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and will address the statutory preference for treatment as a principal element. The final RI/FS Report as adopted by U.S. EPA will, with the administrative record, form the basis for the selection of the Site's remedy and will provide the information necessary to support the development of the ROD.

As specified in CERCLA Section 104(a)(1), as amended by SARA, U.S. EPA will provide oversight of the Respondents' activities throughout the RI/FS, including all field sampling

activities. The Respondents will support U.S. EPA's initiation and conduct of activities related to the implementation of oversight activities.

SCOPE:

The tasks to be completed as part of this RI/FS are:

Task 1: RI/FS Support Sampling Plan
Task 2: Community Relations Support
Task 3: Remedial Investigation
Task 4: RI/FS Report
Task 5: Progress Reports

TASK 1: RI/FS SUPPORT SAMPLING PLAN

Within 90 120 calendar days of the effective date of the Administrative Consent Order, Respondents shall submit a draft RI/FS Support Sampling Plan to U.S. EPA and Illinois EPA, in accordance with RI/FS guidance referenced in this SOW, that addresses all data acquisition activities. The objective of this RI/FS support sampling is to further determine the extent of contamination at the Site and nearby areas beyond that already identified by previous Site investigations. The plan shall contain a description of equipment specifications, required analyses, sample types, and sample locations and frequencies. The plan shall address specific hydrologic, hydrogeologic, and air transport characterization methods ~~including, but not limited to,~~ such as ~~geologic mapping, geophysics,~~ field screening, drilling and well installation, flow determination, and soil/groundwater/surface water/sediment/waste sampling to determine extent of contamination. Areas to be studied beyond the 132-acre Site boundary include nearby creeks and wetlands that may be contaminated from the Site; and nearby residential, industrial, and commercial, ~~and school~~ properties that may be contaminated from the Site. Respondents are not required to resample areas that were sampled and ~~approved~~ under the U.S. EPA Removal Action.

Respondents shall identify the data requirements of specific remedial technologies that may be necessary to evaluate remedial activities in the RI/FS, and the Respondents shall provide a schedule stating when events will take place and when deliverables will be submitted.

The RI/FS Support Sampling Plan shall include, at a minimum, the following information:

A. Site Background

A brief summary of the Site location, general Site physiography, hydrology, and geology shall be included. For purposes of a response action, the Site includes all suitable areas in very close proximity to the contamination. A summary description of the data already

available shall be included which will highlight the areas of any known contamination and the levels detected. Tables shall be included to display the minimum and maximum levels of detected ~~contaminants~~ across the Site and nearby areas.

The following two reports document previous investigations that have occurred at the Site and nearby areas: the 1995 Illinois EPA "CERCLA Integrated Site Assessment" and the 1999 Ecology and Environment, Inc. "Letter Report for Old American Zinc," prepared for U.S. EPA. The Respondents are encouraged to use these reports to obtain Site background and other information. The Respondents are also encouraged to use the data and analysis ~~based on the~~ Removal Administrative Order on Consent to obtain Site-related information.

B. Data Gap Description

Respondents shall make an analysis of the currently available data to determine the areas of the Site and nearby areas which require additional data in order to define the extent of contamination for purposes of implementing a remedial action. A description of the number, types, and locations of additional samples to be collected shall be included in this section of the sampling plan.

Descriptions of the following activities shall also be included. Sampling results of the media shall be considered in the human health and ~~ecological~~ risk assessments.

i. Waste Characterization

Respondents shall include a program for characterizing the waste materials at the Site. This shall include an analysis of current information/data on past disposal practices at the Site. For any buried wastes that may exist, test pits/trenches and deep soil borings shall be proposed in the plan to determine waste depths and volume, and to determine the extent of cover over fill areas. ~~Soil gas surveys shall also be proposed as appropriate for the areas on and around fill areas of the Site.~~ Geophysical characterization methods, such as ground penetrating radar or magnetometry to further delineate potential removal areas shall also be included as appropriate.

ii. Hydrogeologic Investigation

The plan shall include the degree of hazard, the mobility of ~~pollutants~~, discharges/recharge areas, ~~regional and local~~ flow direction and quality, and local uses of groundwater, including number, location, depth, and use of nearby private wells. The plan shall also develop a strategy to determine horizontal and vertical distribution of contaminants, including extent of any groundwater contaminant plume, and may include other hydraulic tests such as slug tests and

grain size analyses to assist in determining future, potential remediation options where such information has not already been obtained. Upgradient samples shall be included in the plan.

iii. Soils and Sediments Investigation

Respondents shall include a program to determine the extent of any metals contamination of surface and subsurface soils at the Site, and to determine the extent of contamination of surface soils near the Site, especially in residential areas. Respondents are not required to resample areas that were sampled and ~~approved~~ under the U.S. EPA Removal Action. The plan shall include investigations to determine the leachability of ~~Site contamination~~ metals into the groundwater. The plan shall also determine the extent, including depth, of contamination of sediments in Rose Creek, Schoenberger Creek, any other ~~nearby Creeks that may exist~~, drainages related to the Site, and the nearby wetlands that may have been affected by Site contamination. Samples of any leachate present from the areas described as fill shall also be collected.

iv. Surface Water Investigation

Respondents shall include a program to determine ~~the~~ any areas of surface water contamination in Rose Creek, Schoenberger Creek, ~~any other nearby creeks that may exist, and the nearby wetlands~~ nearby creeks and wetlands that may have been affected by Site contamination.

v. Air Investigation

Respondents shall include a program to determine the extent of atmospheric contamination from the ~~various source areas at the~~ Site. The program shall address the tendency of the substances identified through the waste characterization to enter the atmosphere, local wind patterns, ~~and the degree of hazard posed by direct inhalation of contaminants in the air.~~ Specific information quantifying risk shall be covered in the risk assessment portion of the RI/FS Report.

vi. Ecological Assessment

Respondents shall include a plan for collecting data for the purpose of assessing the impact, if any, to aquatic ~~and terrestrial~~ ecosystems within and adjacent to the Site, ~~including within the nearby creeks and wetlands~~, as a result of the disposal, release, and migration of contaminants. Respondents shall determine whether threatened or endangered species exist at the Site, including, but not

OLD AMERICAN ZINC PLANT SITE RI/FS SOW (Continued)

limited to, the Boltonia decurrens plant (decurrent false aster). If threatened or endangered species exist at the Site, Respondents shall include in the plan an ~~terrestrial ecosystem assessment.~~ The plan shall include a description of the aquatic ecosystems affected, an evaluation of toxicity, an assessment of endpoint organisms, and the exposure pathways. The plan shall also include a description of any toxicity testing or [redacted] sampling to be included as part of the assessment. The ecological assessment shall be conducted in accordance with U.S. EPA guidance, including "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments" (June 5, 1997; EPA 540-R-97-006).

Assessment of potential impacts to aquatic life is adequate.

vii. Pilot Tests

aquatic

Respondents shall include a program for ~~any~~ pilot test(s) necessary, as appropriate, including treatability studies, to determine the implementability and effectiveness of technologies where sufficient information is not otherwise available.

No need for pilot tests.

C. Sampling Procedures

Respondents shall include a description of the depths of sampling, parameters to be analyzed, equipment to be used, decontamination procedures to be followed, sample quality assurance, data quality objectives, and sample management procedures to be used in the field. All sampling and analyses performed shall conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC") and management thereof, data validation, and chain of custody procedures. Respondents shall submit a copy of the proposed laboratory's Quality Management Plan (QMP) prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)." (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by U.S. EPA.

Upon request by U.S. EPA, Respondents shall have [redacted] the above mentioned laboratory analyze samples submitted by U.S. EPA for quality assurance monitoring. Respondents shall provide to U.S. EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Respondents shall also ensure provision of analytical tracking information consistent with OSWER Directive No. 9240.0-2B, "Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites."

Upon request by U.S. EPA, Respondents shall allow U.S. EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondents or their contractors or agents. Respondents shall notify U.S. EPA and

Illinois EPA not less than 10 business days in advance of any sample collection activity. U.S. EPA shall have the right to take any additional samples that it deems necessary.

When applicable, the "TRW Recommendations for Sampling and Analysis of Soil at Lead (Pb) Sites," OSWER 9285.7-38, April, 2000 guidance should be used to collect and analyze soil lead samples.

vi. Quality Assurance Project Plan (QAPP)

The Respondents shall prepare a draft, Site-specific QAPP covering sample analysis and data handling for samples collected during the RI, based on the ~~Administrative~~ Consent Order and guidance provided by U.S. EPA. The QAPP shall be consistent with the requirements of the U.S. EPA Contract Lab Program (CLP) for laboratories proposed outside the CLP. The U.S. EPA strongly encourages the Respondents to follow U.S. EPA Region 5 Superfund Division Model QAPP guidance to prepare the QAPP.

The Respondents shall prepare a final QAPP after receiving comments from U.S. EPA on the draft QAPP. Draft and final submittals by the Respondents shall follow the schedule of the RI/FS Support Sampling Plan.

Prior to submitting the draft QAPP, the Respondents shall participate in a pre-QAPP meeting or conference call with U.S. EPA. The purpose of this meeting or conference call is to discuss QAPP requirements and obtain any clarification needed to prepare the QAPP.

vii. Field Sampling Plan

The Respondents shall develop a Field Sampling Plan, as described in "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," October, 1988. The Field Sampling Plan should supplement the QAPP and cover all RI sample collection activities. The Respondents shall submit draft and final versions of the Field Sampling Plan according to the schedule for the RI/FS Support Sampling Plan.

D. Health and Safety Plan

Respondents shall prepare a Site Health and Safety Plan which is designed to protect on-Site personnel, area residents, and nearby workers from physical, chemical, and all other hazards posed by sampling events described in this SOW. The Health and Safety Plan shall develop the performance levels and criteria necessary to address the following areas:

- General requirements
- Personnel
- Levels of protection
- Safe work practices and safe guards
- Medical surveillance
- Personal and environmental air monitoring
- Personal hygiene
- Decontamination - personal and equipment
- Site work zones
- Contaminant control
- Contingency and emergency planning (including response to fires/explosions)
- Logs, reports, and record keeping

The Health and Safety Plan shall, at a minimum, follow U.S. EPA guidance document "Standard Operating Safety Guides" (Publication 9285.1-03, PB92-963414, June, 1992), and all OSHA requirements as outlined in 29 CFR 1910.

E. Schedule

Respondents shall include a schedule which identifies timing for initiation and completion of all tasks to be completed as part of this RI/FS Support Sampling Plan. An amended RI/FS Support Sampling Plan, if required, shall be submitted to U.S. EPA and Illinois EPA within 45 calendar days of the receipt of U.S. EPA's comments on the draft RI/FS Support Sampling Plan. resolution

TASK 2: COMMUNITY RELATIONS SUPPORT

The development and implementation of community relations activities are the responsibility of U.S. EPA, in consultation with Illinois EPA. The critical community relations planning steps performed by U.S. EPA and Illinois EPA include conducting community interviews and developing a community relations plan. Although implementation of the community relations plan is the responsibility of U.S. EPA and Illinois EPA, Respondents may assist by providing information regarding the Site's history, participating in public meetings, assisting in preparing fact sheets for distribution to the general public, or conducting other activities approved by U.S. EPA and Illinois EPA.

The U.S. EPA and Illinois EPA are not required to formally respond to significant comments except during the formal public comment period on the proposed plan after the RI/FS. The extent of Respondent involvement in community relations activities is left to the discretion of U.S. EPA and Illinois EPA. Respondents' community relations responsibilities, if any, shall be specified in the community relations plan. All Respondent-conducted community relations activities will be subject to oversight by U.S. EPA and Illinois EPA.

The U.S. EPA encourages Respondents to provide technical assistance to qualified groups representing the Site's local community, as described in the "Work to be Performed" section of the AOC.

TASK 3: REMEDIAL INVESTIGATION

Respondents shall conduct the RI according to the U.S. EPA approved Sampling Plan and schedule. Respondents shall coordinate activities with U.S. EPA's Remedial Project Manager (RPM).

Respondents shall provide the RPM and the Illinois EPA Site Coordinator with analytical data within ~~35~~ 75 days of ~~each sampling activity~~ receipt of analytical data associated with each sampling activity, in an electronic format showing location, medium, and results. Within seven days of completion of field activities, Respondents shall notify U.S. EPA and Illinois EPA in writing.

TASK 4: REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) REPORT

Within ~~180 calendar days of the collection of the last field sample (as designated by the U.S. EPA RPM) as part of the Remedial Investigation (Task 3),~~ 270 days of receipt of the last set of RI analytical data, Respondents shall submit to U.S. EPA for approval a draft RI/FS Report addressing all of the Site and nearby areas. Respondents shall submit to U.S. EPA a final RI/FS Report that incorporates U.S. EPA's required revisions withing 60 days of ~~receipt~~ resolution of U.S. EPA comments. The RI/FS Report shall be consistent with the ~~Administrative~~ Consent Order and this SOW. The RI/FS Report shall ~~be completed in accordance with the following requirements:~~ include the following information. The U.S. EPA recommends the following sequence and categorization for the report.

We need more time. The schedule is too tight.

1 Executive Summary

2 Site Characterization

2.1 Site Description and Background

2.1.1 Site Location and Physical Setting
2.1.2 Present and Past Facility Operations and Disposal Practices
2.1.3 Geology/Hydrology/Hydrogeology
2.1.4 Current and Past Groundwater Use in the Site Area
2.1.5 Surrounding Land Use and Populations
2.1.6 Sensitive Ecosystems
2.1.7 Meteorology/Climatology

2.2 Groundwater Fate and Transport

- 2.2.1 Contaminant Characteristics
- 2.2.2 Groundwater Fate and Transport Processes
- 2.2.3 Groundwater Contaminant Migration Trends
- 2.2.4 Groundwater Modeling

2.3 Characterization of Other Media

- 2.3.1 Surface Water
- 2.3.2 Air
- 2.3.3 Soil
- 2.3.4 Sediments

2.4 Previous Removal/Remedial Actions
2.5 Source, Nature, and Extent of Contamination
2.6 Analytical Data
2.7 Results of Pilot Tests
2.8 Human Health Risk Assessment
2.9 Ecological Risk Assessment

3 Identification of Remedial Action Objectives

3.1 Determination of Remedial Action Scope
3.2 Determination of Remedial Action Schedule
3.3 Identification of and Compliance with Applicable or Relevant and Appropriate Requirements (ARAR)

4 Identification and Analysis of Remedial Action Alternatives

5 Detailed Analysis of Alternatives

5.1 Effectiveness

- 5.1.1 Overall Protection of Human Health and the Environment
- 5.1.2 Compliance with ARARs and Other Criteria, Advisories, and Guidance
- 5.1.3 Long-Term Effectiveness and Permanence
- 5.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment
- 5.1.5 Short-Term Effectiveness

5.2 Implementability

- 5.2.1 Technical Feasibility
- 5.2.2 Administrative Feasibility

5.2.3 Availability of Services and Materials
5.2.4 State and Community Acceptance

5.3 Cost

5.3.1 Direct Capital Costs
5.3.2 Indirect Capital Costs
5.3.3 Long-Term Operations and Maintenance Costs

6 Comparative Analysis of Remedial Action Alternatives

~~7 Schedule for RI/FS Report Submission~~

RI/FS Outline:

1 **Executive Summary**

The Executive Summary shall provide a general overview of the contents of the RI/FS. It shall contain a brief discussiion of the Site and the current and/or potential threats posed by conditions at the Site.

2 **Site Characterization**

The RI/FS shall summarize available data on the physical, demographic, and other characteristics of the Site and the nearby areas. Specific topics which shall be addressed in the Site characterization are detailed below. The Site characterization shall concentrate on those characteristics necessary to evaluate and select an appropriate remedy.

2.1 Site Description and Background

The Site description includes current and historical information. The following types of information shall be included, where available and as appropriate, in the Site-specific conditions and the scope of the remedial action.

2.1.1 Site Location and Physical Setting
2.1.2 Present and Past Facility Operations and Disposal Practices
2.1.3 Geology/Hydrology/Hydrogeology
2.1.4 Current and Past Groundwater Use in the Site Area
2.1.5 Surrounding Land Use and Populations
2.1.6 Sensitive Ecosystems
2.1.7 Meteorology/Climatology

2.2 Groundwater Fate and Transport

2.2.1 Contaminant Characteristics
2.2.2 Groundwater Fate and Transport Processes
2.2.3 Groundwater Contaminant Migration Trends
2.2.4 Groundwater Modeling

2.3 Characterization of Other Media

2.3.1 Surface Water
2.3.2 Air
2.3.3 Soil
2.3.4 Sediments

2.4 Previous Removal Actions

The Site characterization section shall also describe any previous removal and remedial actions at the Site and nearby areas. Previous information shall be organized as follows:

- The scope and objectives of the previous removal action(s)
- The amount of time spent on the previous removal action(s)
- The nature and extent of hazardous substances, pollutants, or contaminants treated or controlled during the previous removal action(s) (including all monitoring conducted)
- The technologies used and/or treatment levels used for the previous removal action(s).

2.5 Source, Nature, and Extent of Contamination

This section shall summarize the available Site characterization data, including the locations of the hazardous substances, pollutants, or contaminants; the quantity, volume, size, or magnitude of the contamination; and the physical and chemical attributes of the hazardous pollutants or contaminants.

2.6 Analytical Data

This section shall present the available data, including, but not limited to, soil, groundwater, surface water, sediments, and air. This section should discuss any historical data gaps that were identified, and the measures taken to develop all necessary, additional data.

~~2.7 Results of Pilot Tests~~

This section shall document the results of any pilot tests, as appropriate, including treatability studies, as referenced in the R/FS Support Sampling Plan.

2.8 Human Health Risk Assessment

The human health risk assessment shall focus on actual and potential risks to persons coming into contact with on-site contaminants as well as risks to the nearby residential and industrial worker populations from exposure to any contaminated metals soils, sediments, surface water, air, and ingestion of any contaminated organisms in nearby, impacted aquatic ecosystems. Central tendency and reasonable maximum estimates of exposure shall be defined for current land use conditions and reasonable future land use conditions. The risk assessment shall use datta from the Site and nearby areas to identify the any metals contaminants of concern (COC), provide an estimate of how and to what extent human receptors might be exposed to these contaminants, and provide an assessment of the health effects associated with these contaminants. The evaluation shall project the potential risk of health problems occurring if no cleanup action is taken at the Site and/or nearby areas, and establish target action levels for COCs (carcinogenic and non-carcinogenic).

The risk evaluation shall be conducted in accordance with U.S. EPA guidance including, at a minimum: "Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part A)," Interim Final (EPA-540-1-89-002)," OSWER Directive 9285.7-01A; December 1, 1989; and "Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments)," Interim, (EPA 540-R-97-033), OSWER 9285.7-01D, January, 1998.

Additional guidance on performing the human health risk assessment is found in the following USEPA OSWER directives:

1) "Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," OSWER Directive 9200.4-27; August, 1998,

2) "Implementation of the Risk Assessment Guidance for Superfund (RAGS) Volume I - Human Health Evaluation Manual, (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments) (Interim)," OSWER Directive 9285.7-01D-1; December 17, 1997,

3) "Soil Screening Guidance: Technical Background Document," OSWER Directive 9355.4-17A; May 1, 1996,

4) "Soil Screening Guidance: User's Guide," Publication 9355.4-23; April, 1996,

5) "Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," OSWER Directive 9355.4-12; July 14, 1994,

6) "Guidance Manual for the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Publication 9285.7-15-1; February, 1994, and associated, clarifying Short Sheets on IEUBK Model inputs, including but not limited to OSWER 9285.7-32 through 34, as listed on the OSWER lead internet site at www.epa.gov/superfund/programs/lead/prods.htm,

7) "Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Version 0.99D, NTIS PB94-501517, 1994 or "Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Windows© version, 2001,

8) "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual: (Part B, Development of Risk-based Preliminary Remediation Goals)," Interim, OSWER Directive 9285.7-01B; December, 1991, and

9) "Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors," OSWER Directive 9285.6-03; March 25, 1991.

Guidance on assessing human health risk associated with adult exposures to lead in soil is found in the following document: "Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil," December, 1996. This document may be downloaded from the Internet at the following address: www.epa.gov/superfund/programs/lead/prods.htm.

The human health risk assessment shall also include the following elements:

- Hazard Identification (sources). The Respondents shall review available information on the hazardous substances present at the Site and nearby areas, and identify the major COCs. COCs should be selected based on their detected concentrations and intrinsic toxicological properties.

- Conceptual Site Model and Exposure/Pathway Analysis.

- Characterization of Site and Potential Receptors.

- Exposure Assessment. Respondents shall develop central tendency and reasonable maximum estimates of exposure for current and potential land use conditions at and near the Site.

- Toxicity Assessment

- Risk Characterization.

- Identification of Limitations/Uncertainties.

2.9 Ecological Risk Assessment

The ecological risk assessment shall be conducted in accordance with U.S. EPA guidance including, at a minimum: "Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments," (EPA-540-R-97-006, June 1997), OSWER Directive 9285.7-25.

The ecological risk assessment shall describe the data collection activities conducted as part of Task 1(B)(vi) as well as the following information:

- Hazard Identification (sources). The Respondents shall review available information on the hazardous substances present at and adjacent to the Site and identify the ~~major~~ COCs.

- Dose-Response Assessment. COCs should be selected based on their intrinsic toxicological properties.

- Preparation of Conceptual Exposure/Pathway Analysis.

- Characterization of Site and Potential Receptors.

- Selection of Chemicals, Indicator Species, and End Points. In preparing the assessment, the Respondents shall select representative chemicals, indicator species (species that are especially sensitive to environmental contaminants), and end points on which to concentrate.

- Exposure Assessment. The exposure assessment will identify the magnitude of actual exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels.

- Toxicity Assessment/Ecological Effects Assessment. The toxicity and ecological effects assessment will address the types of adverse environmental effects associated with chemical exposures, the relationships between magnitude of exposures and adverse effects, and the related uncertainties for contaminant toxicity (e.g., weight of evidence for adverse effects).

- Risk Characterization. During risk characterization, chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment, shall be compared to measured levels of contaminant exposure levels and the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of metals contaminants at or near the Site are affecting or could potentially affect the environment.

- Identification of Limitations/Uncertainties. Respondents shall identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the report.

3 Identification of Remedial Action Objectives

The RI/FS shall develop remedial and, where appropriate, removal action objectives, taking into consideration the following factors:

- Prevention or abatement of actual or potential exposure to nearby human populations (including workers and residents), ~~animals, and the food chain~~ aquatic resources, and threatened or endangered species, from ~~hazardous substances, pollutants, or~~ metals contaminants;

- Prevention or abatement of actual or potential contamination of drinking water supplies ~~and ecosystems~~; (covered above) metals

- Stabilization or elimination of hazardous substances in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release;

- Treatment or elimination of ~~hazardous substances, pollutants, or~~ contaminants in soils, sediments, groundwater, surface water, or air that may migrate and result in an unacceptable risk; containment metals

- ~~Elimination of threat of fire or explosion;~~

- Acceptable chemical-specific contaminant levels or range of levels for all exposure routes; and metals

- Mitigation or abatement of other situations or factors that may pose threats to human health, welfare, or the environment.

3.1 Determination of Remedial Action Scope

The RI/FS shall define the broad scope and specific short-term and long-term objectives of the remedial action and address the protectiveness of the remedial action.

3.2 Determination of Remedial Action Schedule

The general schedule for remedial action and, where appropriate, removal activities shall be developed, including the start and completion times for the remedial action.

3.3 Identification of and Compliance with ARARs

The RI/FS Report shall identify all ARARs at the Federal and State levels, and other Federal or State advisories, criteria, or guidance to be considered (TBC) that will apply to the remedial action. The RI/FS shall also describe how the ARARs, advisories, criteria, and TBCs will be met.

4 Identification and Analysis of Remedial Action Alternatives

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The RI/FS Report shall identify remedial alternatives. Development of alternatives shall be fully integrated with the Site characterization activities of the RI. The preliminary list of alternatives to address soil, sediments, surface water, groundwater, and air contamination at the Site and nearby areas shall consist of, but is not limited to, methods such as ~~treatment technologies (i.e., thermal methods)~~, removal and off-site treatment/disposal, removal and on-site disposal, and in-place containment for soils, sediments, and wastes.

metals

Based on the analysis of the nature and extent of contamination and on the cleanup objectives developed in the previous sections, a limited number of alternatives appropriate for addressing the remedial action objectives shall be identified and assessed. The limited number of alternatives identified shall be a result of a preliminary screening and evaluation of the larger set of remedial alternatives initially identified. The limited number of alternatives shall include a "no-action alternative." Whenever practicable, the alternatives shall also consider the CERCLA preference for treatment over conventional containment or land disposal approaches.

The use of presumptive remedy guidance, if appropriate and applicable to any of the disposal areas of the Site, may also provide an immediate focus to the identification and analysis of alternatives. This guidance includes, but is not limited to: "Implementing Presumptive Remedies" (EPA 540-R-97-029, October 1997). Presumptive remedies involve the use of remedial technologies that have been consistently selected at similar sites or for similar contamination.

The limited number of alternatives selected for detailed analysis, including any identified presumptive remedies, shall be described with enough detail so that the entire treatment process can be understood. Technologies that may apply to the media or source of contamination shall be listed in the RI/FS Report.

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5 Detailed Analysis of Alternatives

Defined alternatives are evaluated against the short and long-term aspects of three broad criteria: effectiveness, implementability, and cost.

5.1 Effectiveness

The effectiveness of an alternative refers to its ability to meet the objective regarding the scope of the remedial action. The "Effectiveness" discussion for each alternative shall evaluate the degree to which the technology would mitigate threats to human health and the environment. Criteria to be considered include:

5.1.1 Overall Protection of Human Health and the Environment

How well each alternative protects human health and the environment shall be discussed in a consistent manner. Assessments conducted under other evaluation criteria, including long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs shall be included in the discussion. Any unacceptable short-term impacts shall be identified. The discussion shall focus on how each alternative achieves adequate protection and describe how the alternative will reduce, control, or eliminate risks at the Site and nearby areas through the use of treatment, engineering controls, or institutional controls.

5.1.2 Compliance with ARARs and Other Criteria, Advisories, and Guidance

The detailed analysis shall summarize which requirements are applicable or relevant and appropriate to an alternative and describe how the alternative meets those requirements. A summary table may be employed to list potential ARARs. In addition to ARARs, TBCs may be identified.

5.1.3 Long-Term Effectiveness and Permanence

This evaluation assesses the extent and effectiveness of the controls that may be required to manage risk posed by treatment of residuals and/or untreated wastes at the Site. The following components shall be considered for each alternative: magnitude of risk, and adequacy and reliability of controls.

5.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

Respondents' analysis shall address U.S. EPA's policy of preference for treatment including an evaluation based on the following subfactors for a particular alternative:

- The treatment process(es) employed and the material(s) it will treat
- The amount of the hazardous or toxic materials to be destroyed or treated

- The degree of reduction expected in toxicity, mobility, or volume
- The degree to which treatment will be irreversible
- The type and quantity of residuals that will remain after treatment
- Whether the alternative will satisfy the preference for treatment

5.1.5 Short-Term Effectiveness

The short-term effectiveness criterion addresses the effects of the alternative during implementation before the remedial objectives have been met. Alternatives shall also be evaluated with respect to their effects on human health and the environment following implementation. The following factors shall be addressed as appropriate for each alternative:

- Protection of the community
- Protection of the workers
- Environmental impacts
- Time until response objectives are achieved

5.2 Implementability

This section is an assessment of the implementability of each alternative in terms of the technical and administrative feasibility and the availability of the goods and services necessary for each alternative's full execution. The following factors shall be considered under this criterion:

5.2.1 Technical Feasibility

The degree of difficulty to construct and operate the technology; the reliability of the technology, the availability of necessary services and materials; the scheduling aspects of implementing the alternatives during and after implementation; the potential impacts on the local community during construction operations; and the environmental conditions with respect to set-up, construction, and operation shall be described. Potential future removal actions shall also be discussed. The ability to monitor the effectiveness of the alternatives may also be described.

5.2.2 Administrative Feasibility

The administrative feasibility factor evaluates those activities needed to coordinate with other offices and agencies. The administrative feasibility of each alternative shall be evaluated, including the need for off-site permits, adherence to applicable non-environmental laws, and concerns of other regulatory agencies.

Factors that shall be considered include, but are not limited to, the following: statutory limits, permits, and waivers.

5.2.3 Availability of Services and Materials

The RI/FS must determine if off-site treatment, storage, and disposal capacity; equipment, personnel, services and materials; and other resources necessary to implement an alternative shall be available in time to maintain the remedial schedule.

5.2.4 State and Community Acceptance

State and community acceptance will be considered by U.S. EPA before a final remedial action is decided. Respondents need only mention in the RI/FS that U.S. EPA will consider and address State and community acceptance of an alternative when making a recommendation and in the final selection of the alternative in the ROD.

5.3 Cost

Each alternative shall be evaluated to determine its projected costs. The evaluation should compare each alternative's capital, and operations and maintenance costs. The present worth of each alternative should be calculated.

5.3.1 Direct Capital Costs

Costs for construction, materials, land, transportation, analysis of samples, and treatment shall be presented.

5.3.2 Indirect Capital Costs

Costs for design, legal fees, and permits shall be presented.

5.3.3 Long-Term Operations and Maintenance Costs

Costs for maintenance and long-term monitoring shall be presented.

6 Comparative Analysis of Remedial Action Alternatives

Once remedial action alternatives have been described and individually assessed against the evaluation criteria described in Section 5 above, a comparative analysis shall be conducted to evaluate the relative performance of each alternative in relation to each of the criteria. The purpose of the analysis shall be to identify advantages and

disadvantages of each alternative relative to one another so that key tradeoffs that would affect the remedy selection can be identified.

7 **Schedule for RI/FS Report Submission**

The Respondents shall hold monthly meetings or conference calls with U.S. EPA and Illinois EPA to review the RI/FS progress. The frequency of meetings or calls may be changed if agreed to by U.S. EPA, Illinois EPA, and the Respondents.

Within ~~[illegible]~~ 180 calendar days following ~~the collection of the last field sample as part of the Remedial Investigation (Task 3)~~, receipt of the last set of RI analytical results, Respondents shall present at a meeting the alternatives to undergo a more detailed analysis. Respondents shall provide U.S. EPA and Illinois EPA with enough information before the meeting, including an agenda, such that U.S. EPA and Illinois EPA are able to prepare for the meeting.

A draft RI/FS Report shall be submitted to U.S. EPA and Illinois EPA within ~~[illegible]~~ 270 calendar days of the ~~collection of the last field sample as part of the RI~~ receipt of the last set of RI analytical data.. The amended RI/FS, if required, shall be submitted to U.S. EPA and Illinois EPA within ~~[illegible]~~ 60 calendar days of ~~[illegible]~~ U.S. EPA's comments on the draft RI/FS.

Following U.S. EPA approval of the RI/FS, U.S. EPA will issue a Proposed Plan to the public wherein U.S. EPA will propose one alternative, or a combination of alternatives evaluated in the FS, as the preferred alternative. Public comments will be solicited and evaluated before U.S. EPA makes a final decision on a remedial plan. The final decision will be documented in the ROD for the Site and nearby areas.

TASK 5: PROGRESS REPORTS

Respondents shall submit monthly written progress reports to U.S. EPA and Illinois EPA concerning actions undertaken pursuant to the ~~Administrative~~ Consent Order and this SOW, beginning 30 calendar days after the effective date of the ~~Administrative~~ Consent Order, until termination of the ~~Administrative~~ Consent Order, unless otherwise directed in writing by the RPM. These reports shall describe all significant developments during the preceding period, including the work performed and problems encountered, analytical data received during the reporting period, and developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and actual or planned resolutions of past or anticipated problems.

OLD AMERICAN ZINC PLANT SITE RI/FS SOW (Continued)

SCHEDULE FOR MAJOR DELIVERABLES

Deliverable	Deadline
TASK 1: Draft RI/FS Support Sampling Plan	~~90~~ 120 calendar days after effective date of Order
TASK 1: Final RI/FS Support Sampling Plan	~~30~~ 45 calendar days after ~~receipt~~ resolution of U.S. EPA comments
TASK 3: RI Analytical Data of Each Sampling Activity Notification of Completion of Field Activities	90 Within ~~45~~ days of receipt of analytical data associated with each sampling activity Within 7 days of completion of field activities
TASK 4: Draft RI/FS Report	~~180 calendar days following collection of last field sample or part of RI (Task 2), to be designated by RPM~~ Within ~~270~~ days of (270) receipt of the last set of RI analytical data
TASK 4: Final RI/FS Report	~~30~~ 60 calendar days after ~~receipt~~ resolution of U.S. EPA comments on draft RI/FS Report
TASK 5: Monthly Progress Reports	10th business day of each month (commencing 30 days after effective date of Order)
Miscellaneous Documents	In accordance with submittal date provided by RPM

HHRA, ~~ERA~~ Aquatic, RI/FS
Need time.

REFERENCES

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

RI/FS Process:

"National Oil and Hazardous Substances Pollution Contingency Plan (NCP); Final Rule" (40 CFR Part 300)

"Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.

"Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA" (Publication 9360.0-32, August 1993)

"Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

"Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, OSWER Directive No. 9835.3

"A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

"EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/9-78-001-R.

"Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

"Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements," U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

"CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.

"Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remediall Response, (draft), OSWER Directive No. 9283.1-2.

"Draft Guidance on Preparing Superfund Decision Documents," U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.3-02

"Implementing Presumptive Remedies" (EPA 540-R-97-029, October 1997)

Quality Assurance Project Plans (QAPP) and Quality Management Plans (QMP)
"Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.

"Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

"Users Guide to the EPA Contract Laboratory Program," U.S. EPA, Sample Management Office, August 1982.

"Extending the Tracking of Analyttical Services to PRP-Lead Superfund Sites" OSWER Directive No. 9240.0-2B

"EPA Guidance for Quality Assurance Project Plans (QA/G-5)"(EPA/600/R-98/018, February 1998).

"EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA 240/B-01/003, March 2001).

"EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001).

Health and Safety Requirements
"Health and Safety Requirements of Employees Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

"Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

Community Relations
"Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0#3B.

"Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1A.

"Response Selection and Enforcement Approach for Superfund Alternative Sites," U.S. EPA, Office of Site Remediation Enforcement, June 2002, OSWER Directive No. 92-08.0-17.

Human Health Risk Assessment

"Performance of Risk Assessments in Remedial Investigation /Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)," August 28, 1990, OSWER Directive No. 9835.15.

"Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No. 9355.0-30.

"Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part A)," Interim Final (EPA-540-1-89-002)," OSWER Directive 9285.7-01A; December 1, 1989;

"Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments)," Interim, (EPA 540-R-97-033), OSWER 9285.7-01D, January, 1998.

"Risk Assessment Guidance for Superfund - Volume II Environmental Evaluation Manual," March 1989, EPA/540/1-89/001

"Implementation of the Risk Assessment Guidance for Superfund (RAGS) Volume I - Human Health Evaluation Manual, (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments) (Interim)," OSWER Directive 9285.7-01D-1; December 17, 1997,

"Guidance for Data Usability in Risk Assessment," October, 1990, EPA/540/G-90/008

"Performance of Risk Assessments in Remedial Investigation /Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)," August 28, 1990, OSWER Directive No. 9835.15.

"Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No. 9355.0-30.

"Soil Screening Guidance: Technical Background Document," OSWER Directive 9355.4-17A; May 1, 1996,

"Soil Screening Guidance: User's Guide," Publication 9355.4-23; April, 1996,

OLD AMERICAN ZINC PLANT SITE RI/FS SOW (Continued)

"Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual: (Part B, Development of Risk-based Preliminary Remediation Goals)," Interim, OSWER Directive 9285.7-01B; December, 1991, and

"Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors," OSWER Directive 9285.6-03; March 25, 1991.

Lead in Soil

"Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," OSWER Directive 9355.4-12; July 14, 1994,

"Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," OSWER Directive 9200.4-27; August, 1998,

"Guidance Manual for the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Publication 9285.7-15-1; February, 1994, and associated, clarifying Short Sheets on IEUBK Model inputs, including but not limited to OSWER 9285.7-32 through 34, as listed on the OSWER lead internet site at www.epa.gov/superfund/programs/lead/prods.htm.

"Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Version 0.99D, NTIS PB94-501517, 1994 or "Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Windows© version, 2001,

"TRW Recommendations for Sampling and Analysis of Soil at Lead (Pb) Sites," OSWER 9285.7-38, April, 2000

"Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil," December, 1996. (www.epa.gov/superfund/programs/lead/prods.htm)

Ecological Risk Assessment

"U.S. EPA Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments." Office of Ecological and Remedial Response, Washington, D.C. 1997 (EPA-540-R-97-006, June 1997; OSWER Directive 9285.7-25).